(Billing Code: 4150-31)

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Office of the Secretary

Findings of Research Misconduct

AGENCY: Office of the Secretary, HHS.

ACTION: Notice.

SUMMARY: Notice is hereby given that the Office of Research Integrity (ORI) has taken final action in the following case:

Michael W. Miller, Ph.D., State University of New York, Upstate Medical University: Based on the report of an investigation conducted by the State University of New York, Upstate Medical University (SUNY UMU) and additional analysis conducted by ORI in its oversight review, ORI found that Dr. Michael W. Miller, former Professor and Chair, Department of Neuroscience and Physiology, SUNY UMU, engaged in research misconduct in research supported by National Institute of Alcohol Abuse and Alcoholism (NIAAA), National Institutes of Health (NIH), grants R01 AA07568-18A1, R01 AA06916, and P50 AA017823-01.

ORI finds that the Respondent engaged in research misconduct by falsifying and/or fabricating data that were included in grant applications R01 AA07568-18, R01 AA07568-18A1, R01 AA006916-25, and P50 AA017823-01 and in the following:

- Miller, M.W., Hu, H. "Lability of neuronal lineage decisions is revealed by acute exposures to ethanol." *Dev. Neurosci*. 31(1-2):50-7, 2009 ("*Dev. Neurosci*. 2009")

- Bruns, M.B., Miller, M.W. "Functional nerve growth factor and trkA autocrine/paracrine circuits in adult rat cortex are revealed by episodic ethanol exposure and withdrawal." *J. Neurochem*. 100(5):1115-68, 2007 ("*J. Neurochem*. 2007")

- a prepared manuscript submitted to *PNAS* for publication.

As a result of its investigation, SUNY UMU recommended that *Dev. Neurosci*. 2009 and *J. Neurochem*. 2007 be retracted. Both publications have now been retracted:

- *Dev. Neurosci*. 2009 was retracted online on January 19, 2012, at: http://content.karger.com/ProdukteDB/produkte.asp?Aktion=ShowPDF&ArtikelNr=323471&Ausgabe=0&ProduktNr=224107&filename=323471.pdf

- *J. Neurochem*. 2007 was retracted online on January 23, 2012, at: http://onlinelibrary.wiley.com/doi/10.1111/j.1471-4159.2012.07662.x/full.

Specifically, ORI finds that the Respondent:

- falsified Figure 5 in NIH grant application R01 AA07568-18A1 by altering the bar graphs to make the experimental results appear valid and consistent with his hypothesis that ethanol exposure *in-utero* alters the transition of cells from Pax 6 expression to Tbr2 expression, which is critical to normal brain development. Specifically:

    a. in the VZ/SZ panel (upper row, right), Dr. Miller decreased the values by 50% for the bar graphs representing control and treated mice for "Tbr2," "both," and "both/Ki-67," to falsely report an equivalent frequency of Tbr2 expressing cells in the right and left panels; this result was required for the experiment to appear valid;

    b. in the MGE panel (lower row, right), Dr. Miller altered the bar graphs representing control and treated mice for "Ki-67," "Pax6," and "both" to falsely report that ethanol increased the frequency of K-67+ cells and to report an equivalent frequency of Pax expressing cells in the right and left panels.

- fabricated bar graphs in Supplemental Figure 2 in a manuscript submitted to *PNAS* and text in the manuscript also appearing in the grant application AA00616-25 to support the hypothesis that ethanol exposure during postnatal weeks 1 and 2 causes specific neuronal cell death in layers II/III and V of the cortex. Specifically, Dr. Miller:

a. fabricated bar graphs in Supplemental Figure 2 and related text in the *PNAS* manuscript to show that in select layers of the cortex, ethanol induced neuronal death occurred in post-natal day 10 (P10) mice;

b. included fabricated text in the *PNAS* manuscript and the grant application citing results of experiments using 15-25-day-old mice treated with ethanol during the second postnatal week, when these mice were never generated.

- falsified Figure 6 in a manuscript submitted to *PNAS* by altering data points for the labeling index of caspase3 and TUNEL in cortex layers II/III and V after exposure to ethanol in postnatal day 7 (P7) mice, such that the two assays confirmed each other. The same data were also included as Figure 4 in NIH grant application R01 AA06916 and as Figure 7 in a poster presentation at the 2009 Research Society on Alcoholism.

- falsified the figure legends and/or text in a published paper and multiple grant applications to support the primary hypothesis of the published paper that gestational alcohol exposure had an effect on brain development by affecting the way neurons differentiate and migrate into the cortex, rather than by changes to cell growth or death. Specifically, Dr. Miller falsely reported the number of animals (n) that were used in figure legends and/or text in the following:

- Figures 2 and 5, *Dev. Neurosci*. 2009, also included as Figures 3 and 4, respectively, in R01 AA07568-18;

- Figure 4 and Table 2 in P50 AA017823-01.

- falsified Figures 4 and 6 in J. *Neurochem*. 2007 by altering bar graphs to increase the significance of the effect of ethanol exposure and/or withdrawal on NGF or trkA protein expression, thereby conforming with the paper's hypothesis that ethanol exposure and withdrawal affect the normal NGF/trkA circuits in cortical layer V. Specifically, Dr. Miller:

a. increased the value of the ethanol treated NGF expression in Figure 4 and decreased the value of withdrawal NFG to alter the difference between the two from approximately 2.2% to 11.6%, thereby falsely reporting significance where there was none;

b. in Figure 6:

a) increased the value of withdrawal trkA data by approximately 70% to falsely report significance with relation to the ethanol treated value and increase significance with relation to the control;

b) increased the value of the ethanol treated phospho-trkA data by approximately 100% to increase the significance with relation to the control;

c) falsely reported the results for Figure 6 as showing a nearly doubled ratio of p-trkA to total trkA after ethanol exposure when there was no increase at all.

Dr. Miller has entered into a Voluntary Exclusion Agreement (Agreement). Dr. Miller neither admits nor denies committing research misconduct but accepts ORI has found evidence of research misconduct as set forth above.

Dr. Miller has voluntarily agreed:

(1) to exclude himself voluntarily from any contracting or subcontracting with any agency of the United States Government and from eligibility or involvement in nonprocurement programs of the United States Government referred to as "covered transactions" pursuant to HHS' Implementation (2 C.F.R. Part 376 *et seq*) of OMB Guidelines to Agencies on Governmentwide Debarment and Suspension, 2 C.F.R. Part 180 (collectively the "Debarment Regulations") for a period of one (1) year, beginning on February 6, 2012;

(2) to have his research supervised for a period of two (2) years immediately following the one (1) year period of exclusion; Respondent agrees that prior to the submission of an application for U.S. Public Health Service (PHS) support for a research project on which the Respondent's participation is proposed and prior to the Respondent's participation in any capacity on PHS-supported research, Respondent shall ensure that a plan for supervision of Respondent's duties is submitted to ORI for approval; the supervision plan must be designed to ensure the scientific integrity of Respondent's research contribution as outlined below; Respondent agrees that he shall not participate in any PHS-supported research until such a supervision plan is submitted to and approved by ORI; Respondent agrees to maintain responsibility for compliance with the agreed upon supervision plan; the requirements for Respondent's supervision plan are as follows:

i. a committee of 2-3 senior faculty members at the institution who are familiar with Respondent's field of research, but not including Respondent's supervisor or collaborators, will provide oversight and guidance for two (2) years immediately following the period of exclusion; the committee will review primary data from Respondent's laboratory on a quarterly basis and submit a report to ORI at six (6) month intervals setting forth the committee meeting dates, Respondent's compliance with appropriate research standards, and confirming the integrity of Respondent's research; and

ii. the committee will conduct an advance review of any PHS grant applications (including supplements, resubmissions, etc.), manuscripts reporting PHS-funded research submitted for publication, and abstracts; the review will include a discussion with Respondent of the primary data represented in those documents and include a certification to ORI that the data presented in the proposed application/publication is supported by the research record;

(3) that any institution employing him during the two (2) years during which the supervisory plan is in effect shall submit, in conjunction with each application for PHS funds, or report, manuscript, or abstract involving PHS-supported research in which Respondent is involved, a certification to ORI that the data provided by Respondent are based on actual experiments or are otherwise legitimately derived and that the data, procedures, and methodology are accurately reported in the application, report, manuscript, or abstract; and

(4) to exclude himself from serving in any advisory capacity to PHS including, but not limited to, service on any PHS advisory committee, board, and/or peer review committee, or as a consultant for a period of three (3) years, beginning on February 6, 2012.

FOR FURTHER INFORMATION CONTACT:

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